

April 24, 1951

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2,550,336

LOUD SPEAKER CABINET WITH INCLINED BAFFLES

Filed Aug. 14, 1947

FIG. 2.

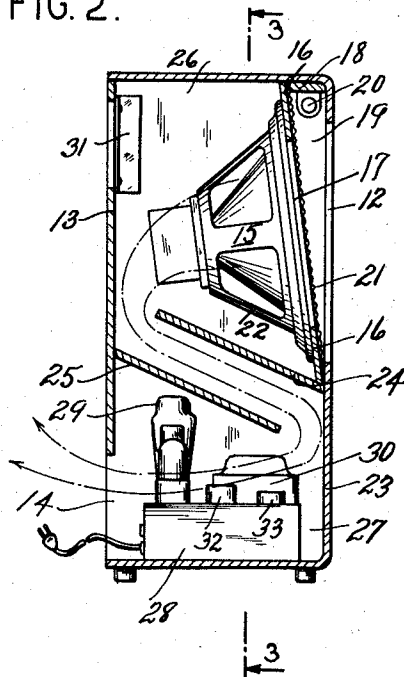


FIG. 1.

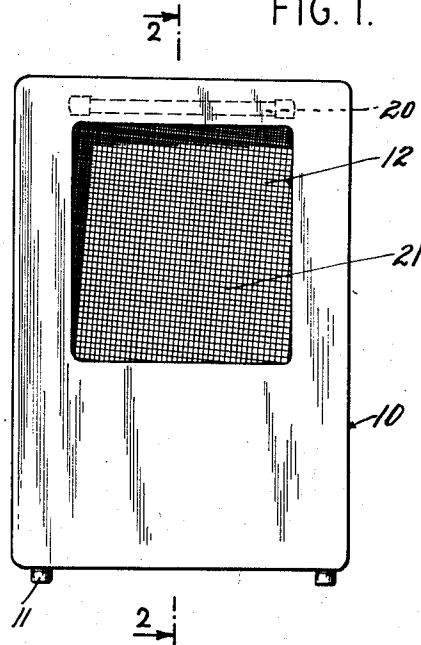
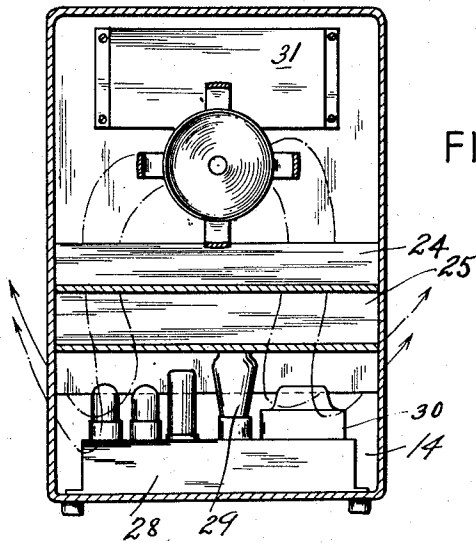


FIG. 3.

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2,550,336

LOUD-SPEAKER CABINET WITH INCLINED
BAFFLES

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Application August 14, 1947, Serial No. 768,650

3 Claims. (Cl. 181—31)

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This invention relates to amplifier cabinets and more particularly to a cabinet including a loudspeaker adapted to reproduce and emit sound waves in the customary manner.

It is recognized that baffles, either flat or of the box type, are employed in order to artificially increase the distance of the sound wave path from the front to the back of the speaker cone or mouth. The purpose thereof is to prevent neutralization of the emitted sound waves and the larger the baffle, the greater is the delay and the lower are the frequencies which can be produced by the instrument. However, there are practical limitations in the construction of cabinets, one of which is the desirability of maintaining the cabinet within such weight and size limits as to render it conveniently portable. This is of particular importance in amplifier cabinets used with musical instruments, such as electric guitars or the like where the musician is generally required to carry the cabinet during his travels.

A common expedient in the construction of amplifier cabinets has been to provide opposed baffle plates within the cabinet so as to form an acoustic labyrinth for further delaying the sound wave path. With the foregoing in mind, it is an object of the present invention to provide a form of labyrinth which greatly extends the sound wave path although a minimum of baffle plates are employed and are so arranged that the cabinet may be made both narrower and shorter than conventional cabinets providing the same sound wave path length. Thus, the baffle plates are arranged in such a manner as to provide a space which conforms in large part to the shape of a speaker unit, thus conserving considerable area within the cabinet. The baffle plates are further formed to provide a space conforming in large part to the shape of an audio frequency amplifier unit disposed within the case so that the overall space within the cabinet is utilized to its fullest extent while simultaneously providing an effective and lengthened sound wave path.

Other objects of my invention will be apparent from the following description, it being understood that the above general statements of the objects of my invention are intended to describe and not limit it in any manner.

Referring to the drawing:

Fig. 1 is a front elevational view of an amplifier cabinet constructed according to the instant invention.

Fig. 2 is a cross sectional view taken along the lines 2—2 of Fig. 1.

Fig. 3 is a cross sectional view taken along the lines 3—3 of Fig. 2.

The cabinet comprises a case 10 which may be formed of any suitable material, usually wood.

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Feet 11 serve to raise the case from the floor on which it rests. An opening 12 in the front wall of the case permits the sound waves generated by the speaker to be outwardly directed. There is further provided a rear wall 13 having a bottom opening 14.

The case 10 is of generally rectangular shape and includes a conventional speaker unit 15. Speaker unit 15 is provided with a conventional frame baffle 16 which permits the unit to be mounted in the case. Unit 15 may, if desired, be mounted so that its mouth 17 is upwardly directed. Such mounting is for the recognized purpose of directing sound waves upwardly where they are less liable to be obstructed by anterior objects. Thus, a strip 18 of wood, or any other material, is secured at the top front edge of the case and the upper edge of the frame baffle may be connected thereto. The lower edge of the frame baffle may be connected to the front wall of the case below the opening 12 so that a chamber 19 is formed between the speaker and the front wall of the case. I have taken advantage of this chamber to mount a lamp 20 where its rays may be downwardly directed over the speaker mouth. Covering the speaker mouth is a piece of fabric 21 which is sound permeable as is well understood in the art. If desired, the fabric 21 may have printed thereon suitable indicia such as the name of the performer. In such event, the lamp 20 will render the name evident or, in any event, the fabric 21 is given a very pleasing appearance when the device is in a dark room.

In order to provide the acoustic labyrinth, baffle plates are connected within the case. The use of baffle plates per se is, of course, well known but my method of disposing them in the cabinet, in combination with the speaker and amplifier units, renders the cabinet considerably smaller and narrower while providing, nevertheless, a substantial path length for sound waves. Thus, it will be observed that speaker unit 15 is substantially cone-shaped, the mouth 17 representing the base of the cone. The lowermost side of the unit 22 is upwardly inclined within the case from the front wall 23 toward the rear wall 13. Accordingly, a baffle plate 24 is mounted within the case so as to be substantially parallel to the speaker unit underside 22. Thus, baffle plate 24 is likewise inclined upwardly and it terminates short of rear wall 13, in order that sound waves entering or being emitted from opening 14 may travel along the underside of baffle plate 24 from or toward the rear of the speaker cone. A second baffle plate 25 is connected to the rear wall 13 and is formed parallel to baffle plate 24 although terminating short of front wall 23. Accordingly, the sound waves are directed around the free edge of the lower baffle plate 25 as well as that

of the upper baffle plate 24. The baffle plates are superimposed for substantially their entire lengths so that the sound waves must take the circuitous path illustrated in Fig. 2.

The provision of the baffle plates inclined as aforesaid, divides the upper and lower areas of the case into chambers 26 and 27 which are specifically adapted to the speaker unit 15 and an amplifier unit 28 respectively. The mouth 17 of the speaker unit is accorded the front portion of chamber 26 which represents the greatest length of the chamber while the rear portion of the speaker is at the rear portion of chamber 26. Amplifier unit 28, it will be observed, is provided with a large output tube 29 as well as other tubes, and a power transformer 30. It is usual in amplifiers to include an output tube of large size in order to handle the high currents required in actuating the speaker unit. One or more such power tubes may be employed. According to my arrangement, the tube 29 is disposed rearwardly of the case, while the transformer 30 is adjacent the front wall. Accordingly, tube 29 and transformer 30 represent an inclined plane which is substantially parallel to top plate 25, thus rendering chamber 27 specifically fitted to the amplifier unit. Stated in other words, the tube 29 is disposed so as to take advantage of the highest portion of inclined baffle plate 25 whereas it could not fit under the free edge portion thereof. It can be seen, therefore, that the interior volume of case 10 is arranged to house the loudspeaker and amplifier units compactly while providing an elongated path for sound wave travel. This permits a substantial reduction in the overall size of the case while providing a high degree of reproducing fidelity in respect to sound waves of low frequency. Box 31 contains the operating controls such as a volume control, tone control, input jack, etc. while plugs 32 and 33 are connected to the control box 31 and speaker respectively, the wire of plug 33 penetrating a small opening in baffle plate 24 in order to reach the speaker. These wires have been omitted in order to clarify the illustration.

While there has been described what at present is considered a preferred embodiment of the invention, it will be evident that many changes and modifications may be made therein without departing from its spirit. It is therefore aimed in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the invention.

Thus, whereas two baffle plates have been shown, the invention contemplates that three or even more may well be employed and arranged on opposing walls in the manner disclosed.

What is claimed is:

1. A speaker cabinet comprising a case having

front and rear walls, said rear wall being formed with a lower opening to form the entrance of an acoustic labyrinth, a speaker unit mounted at the upper portion of the case, said speaker unit being substantially cone-shaped and having its base or speaker mouth at a speaker opening formed in the upper front wall of the case and so that the lower side of the speaker unit is inclined upwardly toward the rear wall of the case, a first baffle plate connected to the front inner wall of the case below the speaker mouth and being inclined upwardly toward the rear wall of the case so as to be substantially parallel to the lower side of the speaker unit, said first baffle plate terminating short of the rear inner wall to provide a path for sound waves, a second baffle plate connected below said first baffle plate and to the rear inner wall of the case, said second baffle plate being parallel to said first baffle plate and terminating short of the front inner wall to extend the sound wave path whereby an acoustic labyrinth is formed including the lower rear wall opening, both of said baffle plates being superimposed for the major portion of their length.

2. A speaker cabinet comprising a substantially rectangular case, a first baffle plate disposed within the case, said baffle plate being connected at an edge thereof to the front inner wall of the case and being inclined upwardly therefrom and terminating short of the rear inner wall of the case, and a second baffle plate disposed parallel to the first plate and superimposed thereover for the major portion of its length, said second baffle plate being connected at the rear inner wall and being inclined therefrom and terminating short of the front inner wall to form a labyrinth for sound waves, and wherein said cabinet includes a speaker section at one end thereof, including a speaker having a mouth mounted in said speaker section, a frame baffle connected to and around the mouth of the speaker, said frame baffle having its bottom edge resting on said first baffle plate.

3. A speaker cabinet according to claim 2 and wherein said frame baffle is inclined rearwardly relative to said case.

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